ABSTRACT

[0089] The methods and compositions disclosed herein concern highly diverse, novel labels comprising carbon nanotubes of discrete lengths and/or diameters. The nanotube labels may be attached to oligonucleotide or similar probes for use in DNA sequencing. Upon excitation, for example by an electron beam or UV laser, the carbon nanotubes exhibit distinguishable emission spectra. The uses of nanotube labels are not limited to DNA sequencing, but rather are of value in any application where large numbers of distinguishable labels are of use. Novel methods for production of carbon nanotubes and apparatus for detection of nanotubes are also disclosed herein.